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6/1/94 RICHARD J. KHANDROS

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MM02/07/98

EXAMINER

ART UNIT PAPER NUMBER

15

2841

DATE MAILED:

07/18/00

This is a communication from the examiner in charge of your application.
COMMISSIONER OF PATENTS AND TRADEMARKS

This application has been examined Responsive to communication filed on 4/28/00 This action is made final.

A shortened statutory period for response to this action is set to expire 3 month(s), days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

1. Notice of References Cited by Examiner, PTO-892.
2. Notice of Draftsman's Patent Drawing Review, PTO-948.
3. Notice of Art Cited by Applicant, PTO-1449.
4. Notice of Informal Patent Application, PTO-152.
5. Information on How to Effect Drawing Changes, PTO-1474.
6.

Part II SUMMARY OF ACTION

1. Claims 31, 41-112 are pending in the application.
Of the above, claims _____ are withdrawn from consideration.
2. Claims 1 - 26, 40 have been cancelled.
3. Claims _____ are allowed.
4. Claims 39, 41-112 are rejected.
5. Claims _____ are objected to.
6. Claims _____ are subject to restriction or election requirement.
7. This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. Formal drawings are required in response to this Office action.
9. The corrected or substitute drawings have been received on _____. Under 37 C.F.R. 1.84 these drawings are acceptable; not acceptable (see explanation or Notice of Draftsman's Patent Drawing Review, PTO-948).
10. The proposed additional or substitute sheet(s) of drawings, filed on _____, has (have) been approved by the examiner; disapproved by the examiner (see explanation).
11. The proposed drawing correction, filed _____, has been approved; disapproved (see explanation).
12. Acknowledgement is made of the claim for priority under 35 U.S.C. 119. The certified copy has been received not been received been filed in parent application, serial no. _____; filed on _____.
13. Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. Other

EXAMINER'S ACTION

DETAILED ACTION

Drawings

1. The drawings are objected to by the examiner for improper cross hatching. All the parts shown in section should be cross hatched according to MPEP 608.02, page 600-84.

The drawings are also objected to because those figures showing that which is old are **not** labeled with a prior art legend. Such a label is required. See, for example, the brief description of figure 1.

Also, the embodiment of the invention claimed is not shown in the drawings and explained in the detailed description of the invention. An illustration and explanation are required. Please note that all of the features of the elected invention should be shown in a single embodiment.

Please note that drawing corrections cannot be postponed until notice of allowance is received, even though submission of formal drawings can be postponed. See MPEP 608.02(v). Corrections in response to this office action are required.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Treatment of Claims Based on Language and Format

35 U.S.C. § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and

distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 43-44, 53 and 59-60 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term cross-dimension is confusing. Please replace this term with diameter.

The limitations that the second material primarily provides the resiliency and that the second material is stronger have not been considered from the stand point of art, because these limitations are vague. See for example claims 46-47. It is unclear what structural bearing these limitations have on the invention. Therefore, it is not possible for the examiner to evaluate the prior art to determine whether these properties exist or not. Also, such description of the properties (to primarily provide or be stronger) are indefinite, because they are imprecise.

The description that the second material primarily providing the resiliency, for example in claim 46, is indefinite, because the structural manifestation of this limitation is unknown. This also pertains to the limitation of the second material being stronger, as in claim 47.

In claim 60, line 3, "partially returns" is indefinite, because its metes and bounds are unknown.

The description of the shape of the elements in claims 59-60 is very confusing. Please rewrite these claims to describe the shape through its geometry and without reference to movement. For example, claim 59 can recite that the interconnection element has at least one bend.

The use of distant, for example in claim 61, is confusing, because this word has

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relativistic implications (to be far). Examiner suggests the description "spaced apart" instead.

The use of "substantially" in conjunction with being in a common plane is indefinite, for example see claim 62. The regions are in a common plane or not.

Claim 62 does not make sense to the examiner. It appears that the claim intends to state that all of the contact regions of the elements are coplanar.

The term readily shaped, for example in claim 65, is confusing. It is unclear what a readily-shaped material is.

The number 0.00010 does not make sense, because the other limit of the range is specified to a lesser accuracy (one significant figure). First occurrence in claim 52. Examiner recommends changing this to 0.0001.

Please correct these and similar errors in all of the claims whether or not specific mention of the claim is made above.

Treatment of Claims Based on Prior Art

35 U.S.C. § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 39-55, 57-82, 84-112 are rejected under 35 U.S.C. 102(b) as being anticipated by Kanji et al. (US 5067007, hereafter Kanji).

Kanji discloses a substrate or semiconductor die (6, claims 39, 64, 86-87, 96-97, 105-106) having terminals (8) and flexible, resilient (claim 65, 86, 96, 105) interconnection elements (11). See figures 1A, 1C and 1D. The elements have elongated elements of a first material (11A) attached to the terminals and a second material (11B) coating (claims 48, 58, 75, 85-86) the elongated elements (claims 40, 63). The first material is flexible without the second material and comprises Cu (claims 41-42, 57, 68-69, 84, 88, 95, 98, 104, 107), column 7 at line 63, and the second material provides resilient springability and can be Ni or Au (claims 49-50, 76-77, 92, 95, 101, 104, 110), column 7 at line 65, directly on the first material (claim 55, 57, 82, 84).

Claims 45, 72, 90, 109: The second material (11B) is also attached to (8).

Claims 54, 81: Both of the first and second material are conductive.

Claims 59-60, 66: The embodiment of figure 7A discloses the elements extending from the die with the additional feature that of al least one bend where the lead changes direction then returns.

Claims 61-62, 67: The distant contact regions are the other ends of the elements near substrate (1). These regions are coplanar.

Claims 43-44, 53, 70-71, 80, 89, 94, 99, 103, 108, 112: The range .0007 to .003 inches is .018 to 0.18 mm. Kanji teaches this diameter at column 2, line 22.

Claim 51-53, 78-80, 93-94, 102-103, 111-112: The range .00010 to .003 inches is 2.54 to 76.2 μ m. Kanji teaches this range for the nickel coating at column 8, line 1.

Claims 46-47, 73-74, 91, 100: Considering the section 112 rejections above, the structural features of these claims are identical to those of Kanji; therefore, Kanji anticipates these claims.

35 U.S.C. § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103[®] and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 56 and 83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kanji.

Kanji discloses the claimed invention as explained with respect to claims 40 and 63, except for a barrier layer. Nevertheless, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to interpose a barrier layer between the first and second materials, because use of these layers is routine in the art. Barrier layers are provided between the core of a contact element and the outer coat to prevent diffusion of the core and coat into each other, or to provide a seed layer so that the coat layer can be grown on the core.

Information Disclosure Statement

9. The IDS of 2/17/98, paper #3, appears to be duplicate to the IDS of 10/26/99. Paper #3 has not been considered by the examiner. Please resubmit paper #3 with the duplicate references removed.

Response to Arguments

10. Applicant's arguments have been carefully reviewed, but are not persuasive.

Applicant has amended the claims to recite properties of the layers. Nevertheless, these properties are inherent to the prior art. The prior art discloses applicant's choice of material. Assuming that the claims are proper from the standpoint of section 112, paragraph 2, that is, they are complete, the recited properties must be inherent to the material (which is taught by the prior art). Otherwise, other elements not mentioned in the claims are required to provide the recited properties and the claim would be incomplete.

Examiner appreciates the explanations on the mechanism of the two coating working to create the intended affects. Nevertheless, when the structure of the invention is shown by the prior art, mere recitation of inherent functions cannot distinguish it over the prior art.

Applicant argues that Kanji does not teach a free standing structure and defines free standing to mean unattached to a supporting structure or background. Examiner notes that applicant's own contacts do not comply with the definition stated at page 15 of the amendment that free standing means unattached to a supporting unit. The contacts of Kanji are, however, unattached to a background in the same manner as applicant's contact. The contacts of Kanji are also self supporting in that they support their own weight and do not require additional

support to remain erect. For these reasons, they are free standing in the same manner that the present invention is free standing.

Applicant argues the distinction between resilient and flexible. Applicant's arguments are not persuasive. Resilience is the ability to regain one original shape after being bent: elasticity. A member that is not flexible cannot be resilient. To be flexible, one must have the capability of being bent. Therefore, if there is no capability of being bent (not flexible), it is impossible to regain the original shape after having been bent (be resilient).

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

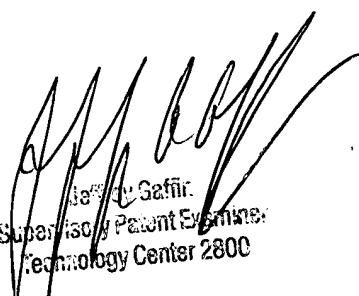
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Closing

12. Any inquiries concerning this communication or earlier communications from the examiner should be directed to Examiner Kamand Cuneo at (703) 308-1233. Examiner Cuneo's supervisor is Mr. Jeffrey Gaffin whose telephone number is (703) 308-3301.

kc

July 17, 2000



Jeffrey Gaffin
Supervisory Patent Examiner
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